

RESPONSE
Appl. No. 10/067,978
Atty. Docket No. EP-7532

REMARKS

In the Office Action mailed January 6, 2005 the Examiner found Claims 1, 3, 6-24, 26-28, 37-40, 42, and 47-63 to be unpatentable under 35 U.S.C. 103(a) over Gatto et al. (U.S. Patent 6,174,842) in view of Latyuk et al. and Belov et al.

As presented herein, Claims 1, 39, 42, 47, 56, 62, and 63 have been amended. Accordingly, Claims 18 and 49 have been deleted.

In view of the present amendments to the claims, the presently claimed invention is distinguishable from the combination of references by Gatto et al., Latyuk et al. and Belov et al. The present claims are directed to a unique spectrum of hydroxy-substituted dithiocarbamate constituents, obtained by undisclosed epoxide chemical reactions, in an oil-based lubricant formulation comprising molybdenum, wherein the hydroxyl-substituted components and their methods of synthesis are not disclosed, taught, nor suggested by the references, when viewed alone or in combination.

Claims 1, 56, and 62 have been amended to provide that at least one alkyl substituent on the nitrogen atom is a C₈-C₂₂ (instead of C₁-C₂₂) alkyl group. Support for this amendment may be found in the text of the specification as well as the examples of the specification and claims, with accompanying data presented in Tables 1 and 2. (See, p. 6 of Present Application, and Examples on pp. 16-30) As noted above, the references to Latyuk et al. and Belov et al. disclosing hydroxy-substituted dithiocarbamates for use in lubricating oils each provide for disubstitution of ethyl groups (with no optional hydrogen atom) on the nitrogen atom. As the characteristics of a compounds having ethyl substituents are known in the art to be different from compounds having substituents of 8 or more carbon atoms, this feature is distinguishable from the references and would not have been obvious to one skilled in the art in view of their disclosures.

Furthermore, these references target variations in their disclosed structures to the other end of the disclosed compounds, specifically, the position alpha to the hydroxy- group, which would imply to one skilled in the art that the functionality of the compound would be directed toward differing substituents at that location and not at the location of the nitrogen atom. Thus, for at least these reasons, the presently claimed invention is distinguishable from Latyuk et al.

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and Belov et al., and would not have been obvious in view of these references either alone or in combination with Gatto et al.

Second, Claims 39, 42, 47, and 63 have been amended to specify the means by which the compounds are obtained, a feature neither disclosed nor taught in the Latyuk et al. and Belov et al. references. The reaction of substantially equimolar proportions of an epoxide, a primary or secondary amine, and carbon disulfide is not disclosed by the references to achieve a hydroxy-substituted dithiocarbamate. Instead, Latyuk et al. disclose derivatives prepared using mercaptan fractions from the purification of wide hydrocarbon fractions of Orenburg gas condensates. Additionally, Belov et al. disclose the reaction of (ROH, R=Bu, n-C₁₀H₂₁, 4-Me₃CC₆H₄, 4-tert-C₈H₁₇C₆H₄, C₁₄-C₁₈ fatty acid residue) with epichlorohydrin in the presence of AV-17 anion exchangers or zeolite-containing aluminosilicate, further reacted with either C₆H₄CMe₃-4 or C₆H₄C₈H₁₇-tert-4 to yield a hydroxy-substituted dithiocarbamate.

The reactions disclosed by these two references do not teach or suggest the substantially equimolar contributions of epoxide, amine, and carbon disulfide constituents described in the presently claimed invention. Additionally, the number of carbon atoms attached to the sulfur molecule (beta to the hydroxy group) ranges from C₂ to C₆ in Latyuk et al., and the number of carbon atoms attached to the oxygen molecule (beta to the hydroxy group) ranges from C₄ to C₁₀ in Belov et al. In contrast, presently claimed invention provides for specific (referring to the provisions in the claims) C₈ to C₁₂ epoxides reacted with dibutylamine and carbon disulfide to form novel hydroxy-substituted dithiocarbamates.

The compounds recited in present Claims 39, 42, 47, and 63 are neither disclosed nor suggested by the Latyuk et al. and Belov et al. references, as neither provides for the combination of these specific epoxides with dibutylamine and carbon disulfide. Further, the present specification provides for the absence of a diluent, a cost-saving mechanism also not disclosed by the references that is provided in the presently claimed application. (p. 9, lines 15-16) Thus, for at least these reasons, the presently claimed invention is distinguishable from the references. Therein, it would not be proper to combine the Latyuk et al. and Belov et al. references with Gatto et al. in consideration of the presently claimed invention.

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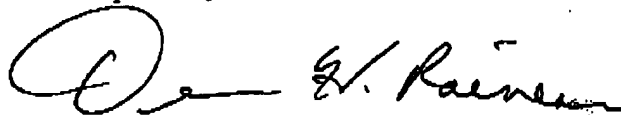
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As noted by the Examiner, with many thanks from Applicants, Claim 18 was a duplicate of Claim 17 and has now been deleted. Further, Claim 49 has been deleted as Claim 1 now provides more specificity with regard to the number of carbon atoms.

Accordingly, the presently claimed application is now believed to be in condition for allowance.

It is believed that there are no fees associated with this filing. However, in the event that the calculations are incorrect, the Commissioner is hereby authorized to charge any deficiencies in fees or credit any overpayment associated with this communication to Deposit Account No. 05-1372.

Respectfully Submitted,



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